

Investigation of the distribution of ^{137}Cs in the surface layer of
the Southern Ocean
(Atlantic sector)

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The latitudinal distribution ^{137}Cs at 18 stations in the surface water of the Southern ocean on sections to the south from Cape of Good Hope (section SR-2) and in Drake passage (30th cruise "Academic Ioffe", 01.12.2009 – 09.01.2010) is investigated. Results are compared with earlier received data for an estimation of the intensity of self-cleaning of the surface water of the ocean in the Antarctic sector of Atlantic from anthropogenous radioactive contamination. For radiochemical ^{137}Cs concentration from the samples of sea water the technique with a consecutive filtration of the water (100L) through 2 capsules filled with a selective sorbent on ^{137}Cs (cobalt ferrocyanide) was used (the technique developed by Livingston et al., 1988). Accuracy of precision gamma spectrometer measurements of ^{137}Cs concentration was 8-25 %. The maximum concentration ^{137}Cs ($0.96 \text{ Bq/m}^3 \pm 10,7 \%$) is received in Drake Passage in the field of local freshening $62^\circ 19.48 \text{ S.}, 63^\circ 47.67 \text{ E.}$. On section SR2 the highest ($0.66 \text{ Bq/m}^3 \pm 10,1 \%$) concentration is received in a point with the minimum salinity of 33.759 ‰ in a southern part of a section $48^\circ 31.2 \text{ S.}, 2^\circ 35.46 \text{ E.}$ in a zone of the Polar front. The concentrations received by us ^{137}Cs are comparable to results of measurements in Drake Passage in 2002 year. The fact that is not considerable reduction of concentration ^{137}Cs despite of radioactive disintegration and vertical mixing of waters requires additional inflow ^{137}Cs in this region. The quasistationary of the level of concentration ^{137}Cs in the Antarctic sector of Atlantic and local connection of the raised concentration ^{137}Cs with freshening of the surface water, possibly pointed on the input of ^{137}Cs with melt water from adjacent continental glaciers.